This matter touches very acutely on medical education. If the picture I have just drawn has any validity it must give us concern as to the type of student we admit to the study of medicine. If some similitude of the priest-physician must be revived, should we not search more avidly for the dedicated man, rather than just the career seeker who happens to have the requisite knowledge of reading, 'riting and 'rithmetic. And once we have got him, does it not become absolutely essential that we fill him as full as we can, and in the best way that we can, with the wisdom of the ages? Can we do this by divorcing stupidly, as we now do, the teaching of culture and medicine? Can we do this by setting him no greater example in moral courage than we are now showing in the face of so many of our problems?

Medicine has reached, or is reaching, a sort of zenith. With his entry into the heart, the surgeon has explored the last of the vital organs. With his entry into the soul, the psychiatrist may well, as I have hinted, be on the point of seriously influencing human belief and behaviour. But long before a human system reaches its zenith that rigidity of thought and timidity of experiment which caused the downfall of every empire from Babylon to Britain have fastened their death grip. With our present attitudes, can we escape?

I believe we can. While the trends may be running against us, nothing is inevitable in human destiny. And because, as I said in the beginning, I prefer lighting a fire under the pot to just stirring what's in it – because I agree with Thomas Wolfe that "the essence of faith is the knowledge that all flows, that everything changes"—I make my plea here for a greater flexibility in our thinking, a greater courage in our philosophy, and a greater adaptability in our policies. As someone has wisely said: "There are many roads to Rome, but we shall never find the best so long as every pilgrim is forced to take the same path." In view of the impending future, hasn't the time come for us to throw off our present smugness and lethargy, face the hard facts of our medical tomorrows, and make a really courageous and intelligent effort not only to save what is worthwhile from our not ignoble past, but mix with its stones the mortar of a greater intellectual adventurousness and so build a better medical world than ever was?

SHORT COMMUNICATION

SELF-CONTAINED RESUSCITATION EQUIPMENT*

HENNING RUBEN, M.D.,
Copenhagen, Denmark

IN EARLIER DAYS, resuscitation equipment was used only occasionally and in isolated cases; now it has become a daily necessity in the treatment of injuries sustained in traffic accidents, industrial accidents, etc., and also in the treatment of patients with bulbar poliomyelitis. Resuscitation equipment would also be of vital necessity in cases of mass casualties.

Methods of manual artificial respiration are not always practical or convenient, especially when prolonged treatment is indicated. Furthermore, existing methods do not always provide adequate air exchange.

In order to compensate for the deficiencies of the manual methods, apparatuses for inflation of the lungs have been devised. Since they are used mostly under emergency conditions, these apparatuses must operate only from commonly available power sources and be independent of electricity, compressed air, petrol, etc. Furthermore, they must not be bulky.

Proper elimination of secretion from the airways, apart from postural drainage, must also be taken into consideration in solving this problem.

Obviously, to provide for satisfactory equipment in respiratory emergencies, two different appliances are necessary: one for artificial respiration and another for suction purposes. Both appliances must be independent of installations, light of weight, of small dimensions and fully effective in all circumstances. They should be of the utmost simplicity in order to be used by non-professional personnel, and durable, since they may have to be stored for prolonged periods of time.

The equipment described below seems to fulfil all these requirements.

1. *Apparatus for Artificial Ventilation* (Fig. 1)

The apparatus consists of a "bag-and-mask" commonly used in anæsthesia but *operable without a cylinder.*

Expansion of the bag has been obtained by lining the inside with foam rubber, so as to provide maximum expansion capacity with minimum resistance against compression. When the bag expands, outside air passes into the bag through a non-return valve. The connecting piece between bag and mask contains another non-return valve, which during compression of the bag directs the air through the mask into the lungs of the patient and without resistance lets the expired air out in the ambient atmosphere, thus preventing re-breathing into the bag.

Tests have shown that the capacity of the bag is more than 40 litres of air per minute. A single, ordinary compression of the bag will expel up to 1300 c.c. of air, the amount depending on the way in which the bag is compressed. The capacity of the bag is sufficient to provide hyperventilation if required. By inserting a rubber tube four or five feet long between the mask and the bag, the resuscitator may be operated by foot, thus allowing the operator to use both hands to keep the mask

*From the Department of Anæsthesiology, the Finsen Institute, Copenhagen, Denmark.

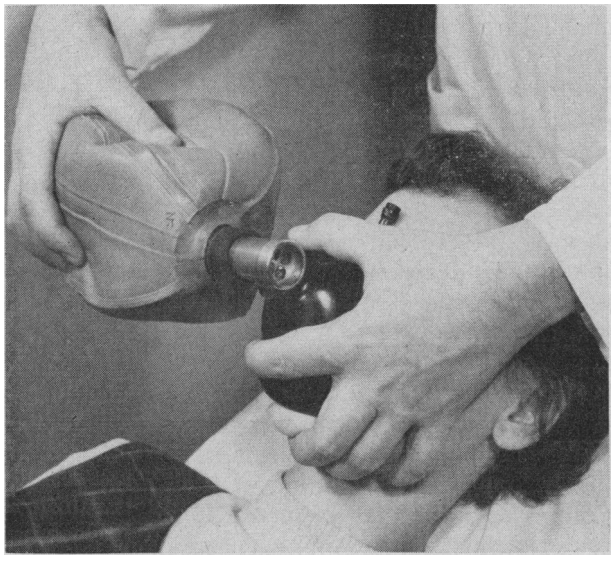

Fig. 1.—Bag respirator in use. Note that no cylinder is used to feed gas in the bag.

airtight and the patient's jaw forward. It was once thought that inexperienced personnel required both hands for proper application of the face mask; however, in the course of training hundreds of laymen in operating the apparatus it has been found that they easily learn to handle the mask correctly with only one hand. The connecting piece may also be attached to an endotracheal tube or a tracheotomy tube.

On occasion the resuscitator has been in continuous use for more than eight hours without causing undue fatigue in the operator.

Furthermore the resuscitator has been used satisfactorily during anæsthesia for the ventilation of patients, some of whom had an open chest. In emergency circumstances and even under extremely primitive conditions, anæsthesia can, therefore, be given safely when this very simple equipment is available.

Fig. 2.—Use of the suction apparatus, which is independent of all installations and gas cylinders, being activated by foot.

2. *Suction Apparatus* (Fig. 2)

The apparatus consists of a concertina bag and a trap bottle with tubing. Suction is obtained by intermittently compressing the bag with the foot. Strong springs cause the bag to expand. The necessary directional valves in the apparatus are made of resistant material which should withstand the action of humidity, water or acid solutions (gastric contents). The size of the valves is such that secretions and blood may pass through them should the trap bottle overflow. The bellows system provides continuous suction even in case of overfilling.

The suction pump can be cleaned without dismantling; it is small and light.

CONCLUSION AND SUMMARY

Two appliances devised for the treatment of apnœa and removal of secretions from the airways are described.

One is a *resuscitator* adapted from the "bag-and-mask" principle used in anæsthesia, but made independent of cylinders, because the bag is self-inflating.

In actual use, it has provided artificial respiration for more than eight hours at a time. It can be used for ventilation during anæsthesia (including open chest surgery).

A *suction apparatus*, independent of usual power sources, completes this field resuscitation set. Suction power is produced by the expansion of a concertina bag which is compressed by foot. In its design, efforts have been made to provide a suction apparatus which can function even under most extreme conditions with a minimum of maintenance. The concertina bellows weigh approximately one pound, and the weight of the complete pump, including bottle and mountings, is less than five pounds.

The two apparatuses form an independent set which, in any emergency, provides fully satisfactory treatment of patients in respiratory distress.

The apparatuses described were obtained from British Oxygen Canada Ltd., Toronto.

BRACELET IDENTIFIES MEDICAL CONDITION

Doctors who want to insure proper emergency medical care for epileptics, diabetics and people who react adversely to drugs can prescribe a bracelet that warns attendants of the patient's special condition. The bracelet, which was invented by Dr. Marion C. Collins of Turlock, California, has a silver or stainless steel tag emblazoned with a red staff of Æsculapius on one side and an appropriate medical warning on the other. In addition to inventing the bracelet, Dr. Collins has founded the Medic Alert Foundation to manufacture it. Bracelets are available on a membership basis of $10 which includes a permanent record of the patient's serial number, name and address on file at the Foundation. Additional bracelets under a family membership are $5. (Medic Alert Foundation, Turlock, California.)